ABSTRACT

The manufacturing method of the invention is applied to manufacture a unit fuel cell 20, which has a hydrogen-permeable metal layer 22 of a hydrogen-permeable metal and an electrolyte layer 21 that is located on the hydrogen-permeable metal layer 22 and has proton conductivity. The method first forms the electrolyte layer 21 on the hydrogen-permeable metal layer 22, and subsequently forms an electrically conductive cathode 24 on the electrolyte layer 21 to block off an electrical connection between the cathode 24 and the hydrogen-permeable metal layer 22. The method releases Pd toward the electrolyte layer 21 in a direction substantially perpendicular to the electrolyte layer 21 to form a Pd layer as the cathode 24 that is thinner than the electrolyte layer 21. This arrangement of the invention effective prevents a potential short circuit, for example, between the cathode and the hydrogen-permeable metal layer, in the fuel cell, due to pores present in the electrolyte layer.